

# Thermodur® E 40 K Superclean

## Technical Datasheet

### Chemistry

Typical	C	Si	Mn	Cr	Mo	V	Add
<b>Analysis %</b>	0.35	0.30	0.30	5.00	1.75	0.80	+

### Material Properties

Thermodur® E 40 K Superclean is a Cr-Mo-V alloyed hot work tool steel with lowest content of trace elements

### Characteristics

Excellent thermal shock resistance  
 Excellent high-temperature strength  
 Excellent toughness  
 Excellent tempering resistance  
 Excellent homogeneity  
 Good wear resistance  
 Outstanding isotropy

### Applications

Widely accepted hot work tool steel for the most demanding conditions  
 Pressure casting dies for complex tools  
 Extrusion dies for heavy metal processing  
 High Pressure die casting dies  
 Injection mold inserts  
 Forging dies

### Physical Properties

<b>Coefficient of thermal expansion at °C at 45 HRc</b> 10 <sup>-6</sup> m/(m•K)	<u>20-100</u> 11.5	<u>20-200</u> 12.0	<u>20-300</u> 12.3	<u>20-400</u> 12.6	<u>20-500</u> 12.9	<u>20-600</u> 13.2	
<b>Thermal conductivity at °C</b> W/(m • K)	<u>RT</u> 28.3	<u>100</u> 29.3	<u>200</u> 30.9	<u>300</u> 31.0	<u>400</u> 30.7	<u>500</u> 29.5	<u>600</u> 27.8

### Heat Treatment

#### Soft Annealing

Temperature	Cooling	Hardness
750°C - 800°C	Furnace	230 HB Max.

#### Hardening

Temperature	Quenching	Hardness
1020°C - 1040°C	Air, oil or saltbath	55 after quenching in HRc

#### Tempering

Temperature °C	300	400	500	550	600	650
Hardness HRc	51	51	52	51	48	36

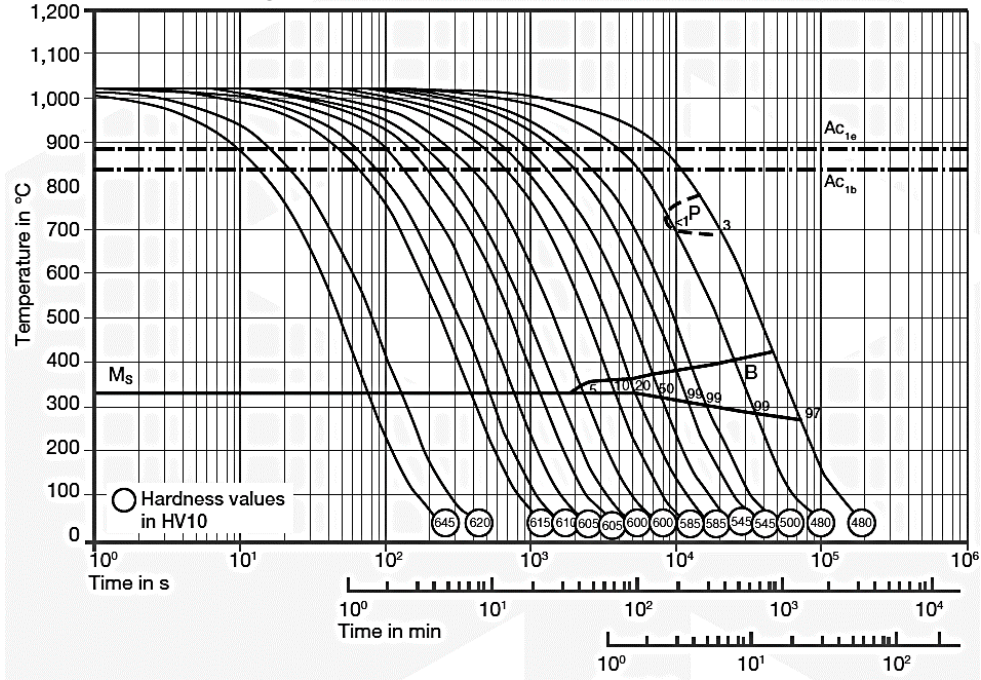
### General Note

All statements regarding the properties or utilization of the materials or products mentioned are for the purpose of description only. Guarantees regarding the existence of certain properties or a certain utilization are only valid if agreed upon in writing.

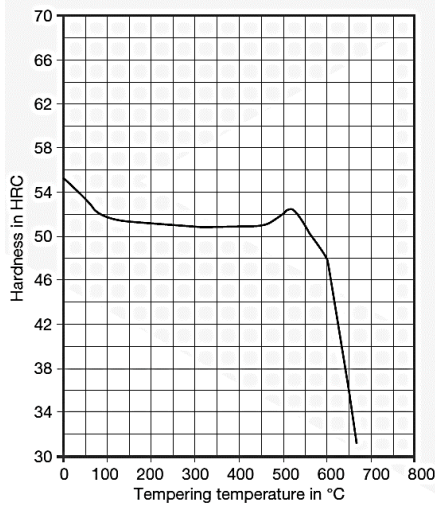
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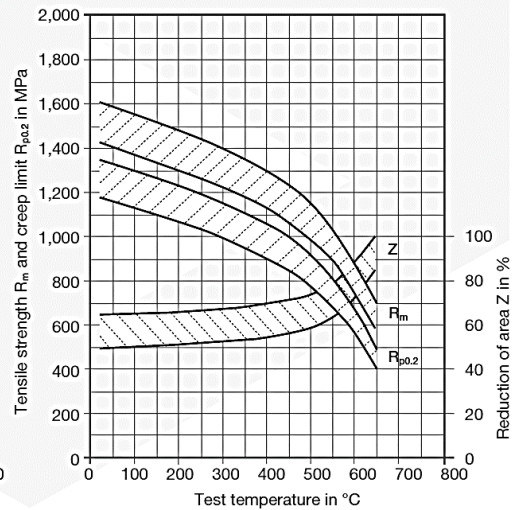
Time-Temperature-Transformation Diagram



TEMPERING DIAGRAM



HIGH-TEMPERATURE STRENGTH DIAGRAM



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### NORTH AMERICAN DISTRIBUTION

#### HEADQUARTERS + TECHNICAL SUPPORT

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#### MANUFACTURING + CENTRAL STOCKING FACILITY

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Batavia, IL 60510

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